



Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Monroe City Route J Lake

Waterbody Segment at a Glance:

County: Ralls
Nearby Cities: Monroe City
Area of impairment: 178 acres
Pollutant: Atrazine, Cyanazine
Source: Corn, sorghum production



State map showing location of watershed

TMDL Priority Ranking: High

Description of the Problem

Beneficial uses of Monroe City Route J Lake:

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health associated with Fish Consumption
- Boating and Canoeing
- Drinking Water Supply
- Whole Body Contact Recreation

Use that is impaired:

- Drinking Water Supply

Standards that apply

- Missouri's Water Quality Standards 10 CSR 20-7.031, Table A, allows a maximum of three micrograms per liter ($\mu\text{g/L}$) atrazine. Because this number is based on health risk associated with a 70-year exposure period, the three $\mu\text{g/L}$ is interpreted as a long-term average.
- A federal health advisory level of one microgram per liter ($\mu\text{g/L}$) cyanazine is recommended for drinking water supplies.

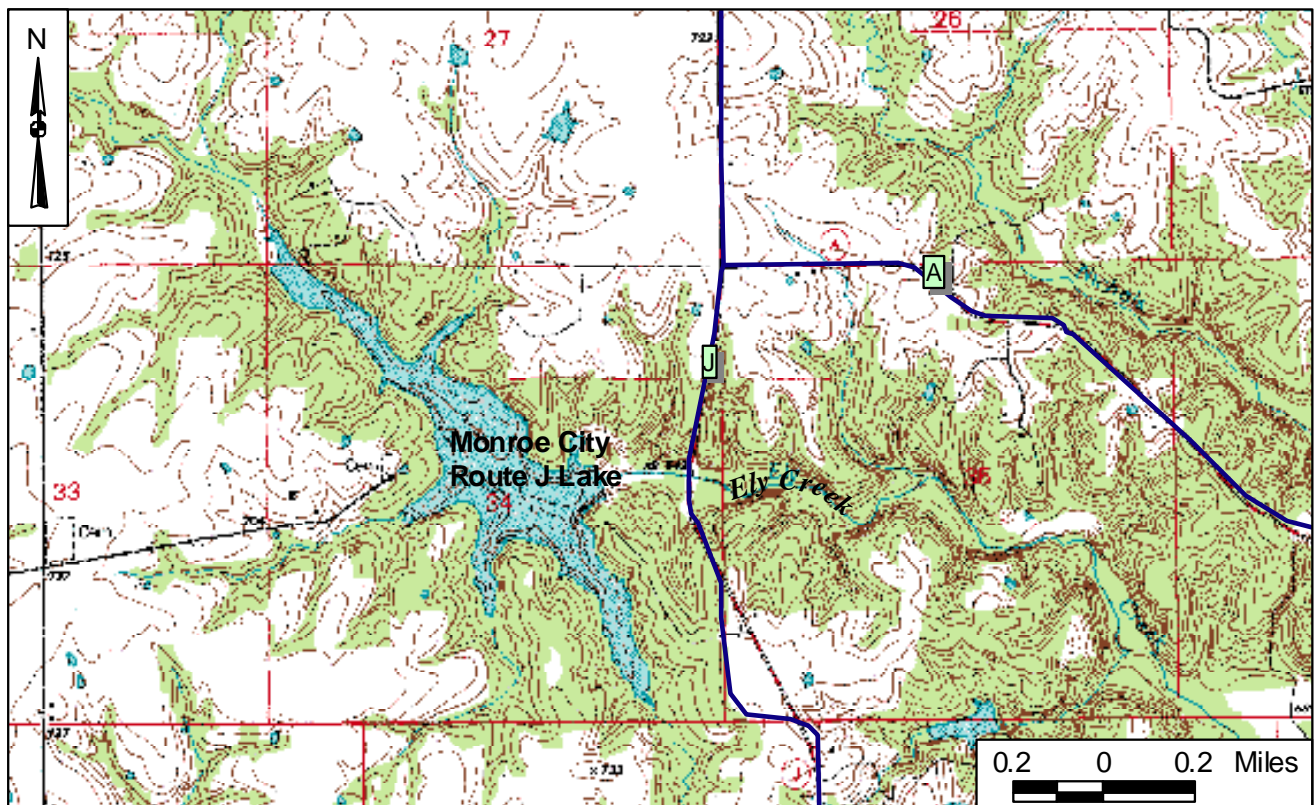
Background Information and Water Quality Data

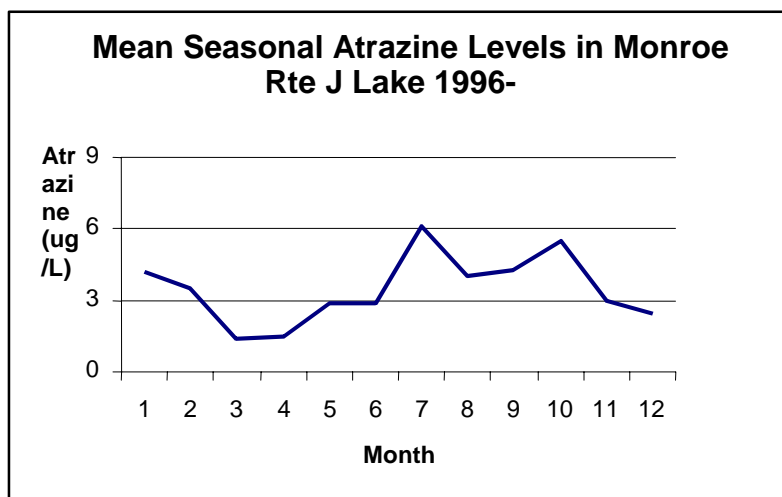
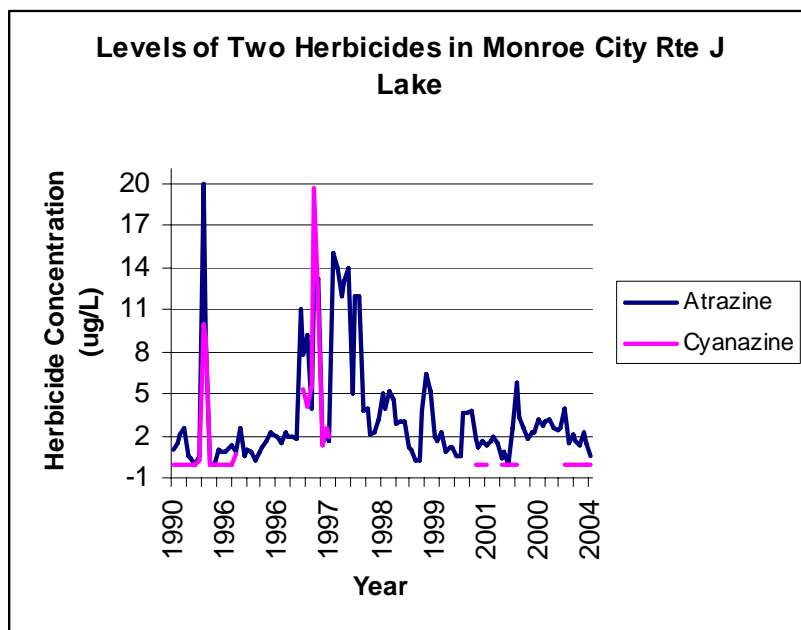
The Route J Lake is the larger of two lakes that are the drinking water supply for the 1,200 people in Monroe City. The watershed is approximately 5,000 acres in size, and is primarily agricultural with 65 percent cropland, 16 percent grassland, 17 percent forest, and two percent water. Monroe City also supplies three rural water districts. The lake has a history of elevated levels of atrazine and cyanazine, two agricultural herbicides commonly used in Missouri on corn and grain sorghum

for broadleaf weed control. Cyanazine was used from 1971 to 1999, when its manufacturer voluntarily withdrew it from production. At one time it was the fourth most widely used synthetic chemical pesticide in U.S. agriculture. It has been identified as a surface water contaminant in 30 states, including Missouri. Cyanazine was withdrawn from use after being linked to a range of adverse health effects, including respiratory distress, cerebral palsy, cancer, and impaired fetal development.

Since 1993, the allowable uses for atrazine have been restricted, but it continues to be widely used in Missouri. Atrazine is considered a possible human carcinogen, so the state standard is set at the very low level of three micrograms per liter ($\mu\text{g/L}$) or parts per billion. In recent years, concentrations of atrazine and cyanazine have been found to frequently exceed state and federal drinking water standards. The state drinking water standard for atrazine is $3 \mu\text{g/L}$ and the federal health advisory level for cyanazine is $1 \mu\text{g/L}$. The long-term average herbicide levels in the lake as of autumn 2003 was $3.33 \mu\text{g/L}$ for Atrazine and $1.66 \mu\text{g/L}$ for Cyanazine. The Department of Natural Resources will continue to monitor herbicide levels in the Route J lake. The following information contains a map of the lake area and graphs that summarize the existing data.

Map of Monroe City Route J Lake, Ralls County





For more information call or write:

Missouri Department of Natural Resources

Water Protection Program

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